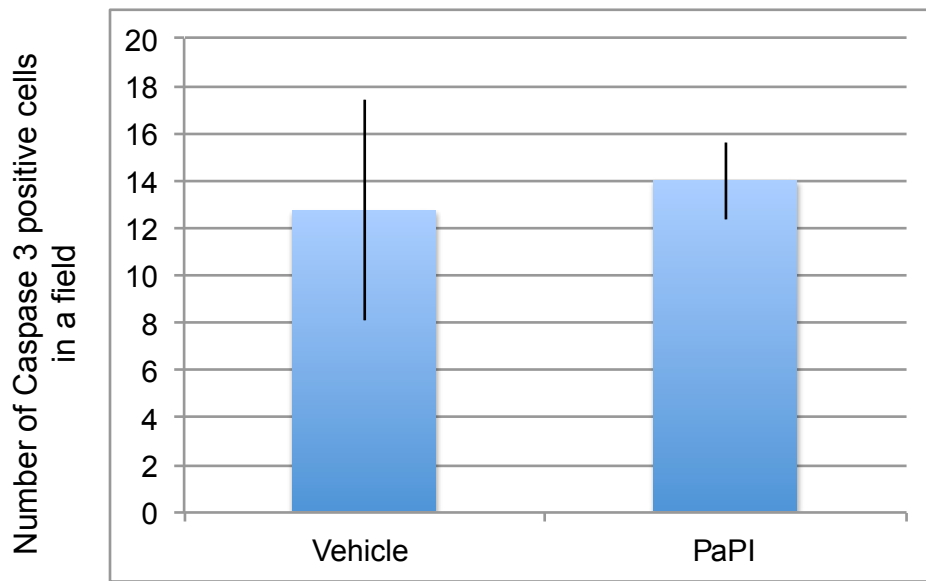
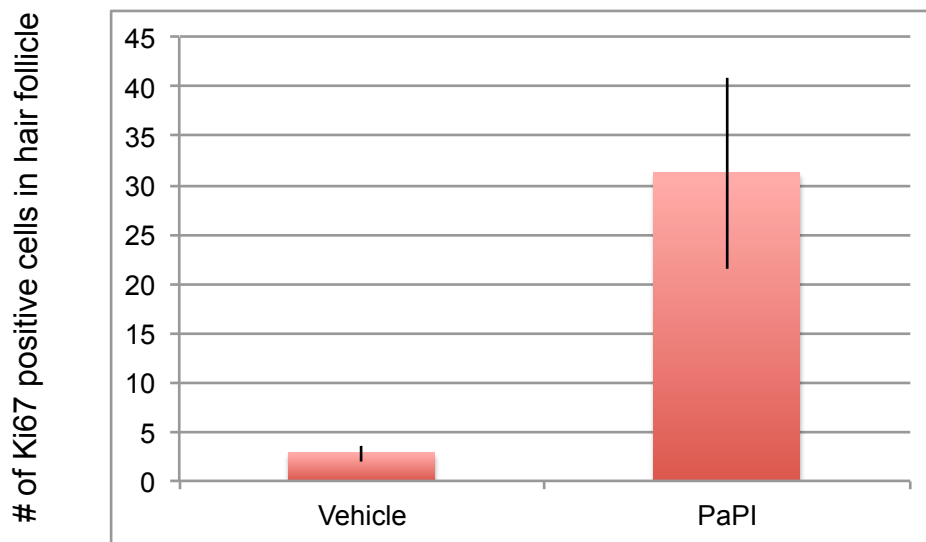
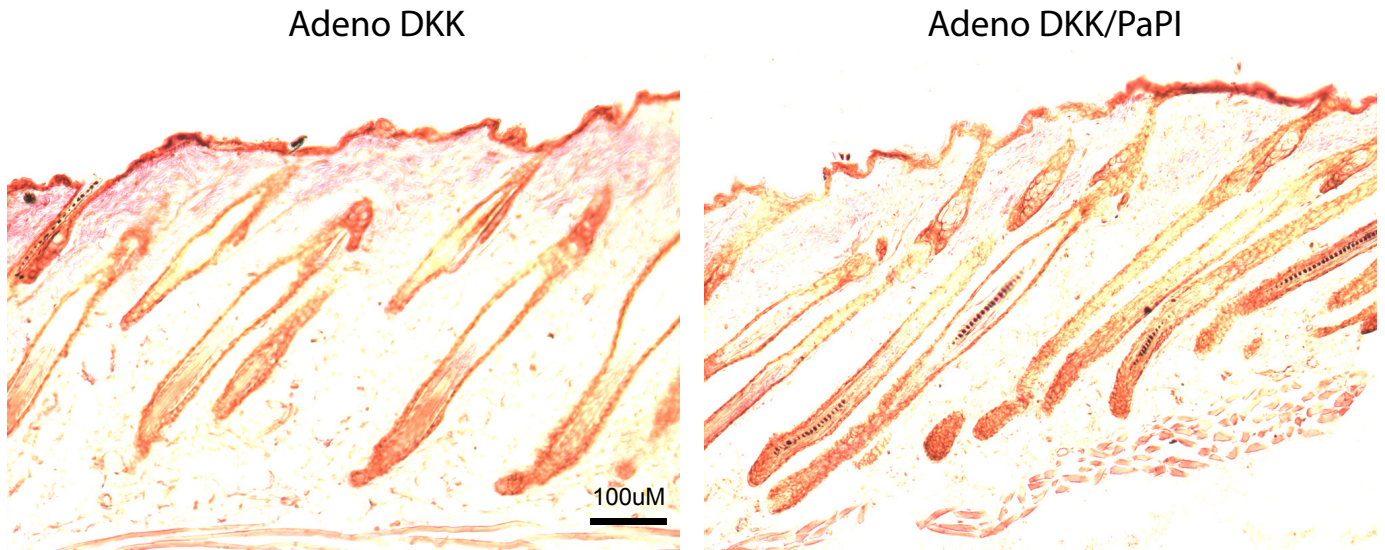
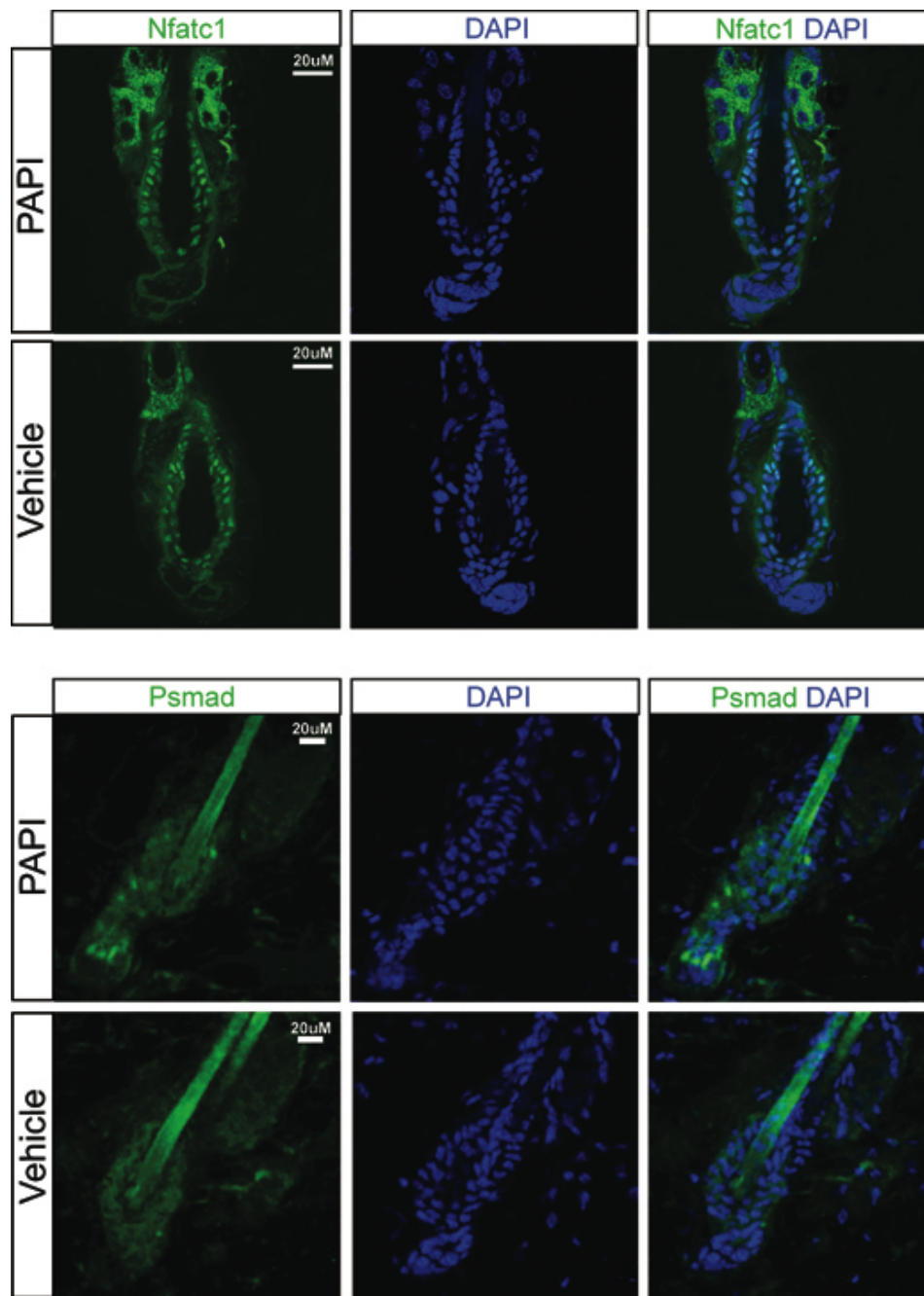


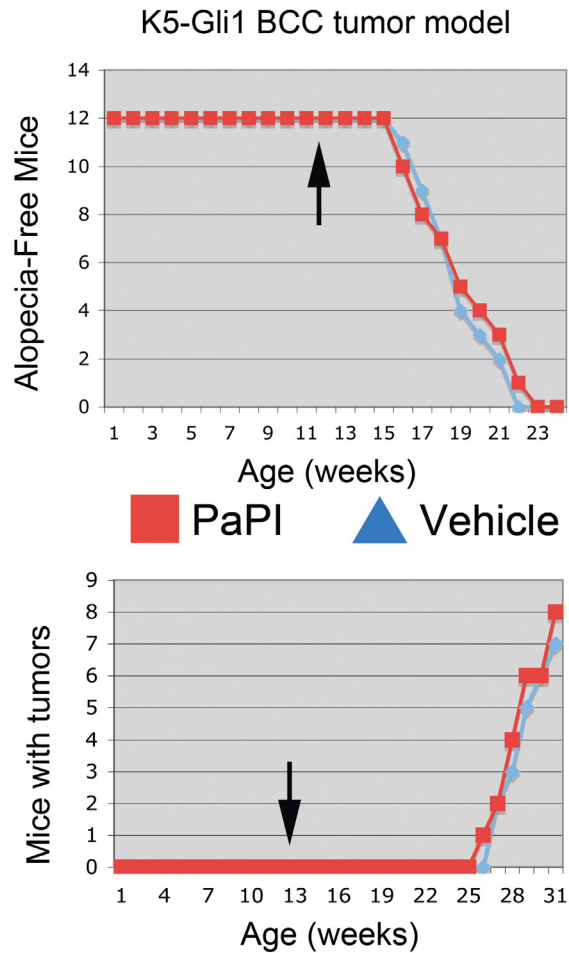
Supplemental Figure 1. Hair growth induced by PaPI treatments. Murine hair grew significantly with the treatment of two different PaPIs, Bortezimib (PaPI1) and Neosil101 (PaPI2). The length of guard hairs were compared when treated with vehicle (black bar), PaPI1 (violet), or PaPI2 (light blue) starting with the onset of the first anagen. Guard hairs at different sites on the dorsal back were also assessed and each was found significant. $P > 0.01$ compared to vehicle. Student T test. $n = 5$

A**B****C**

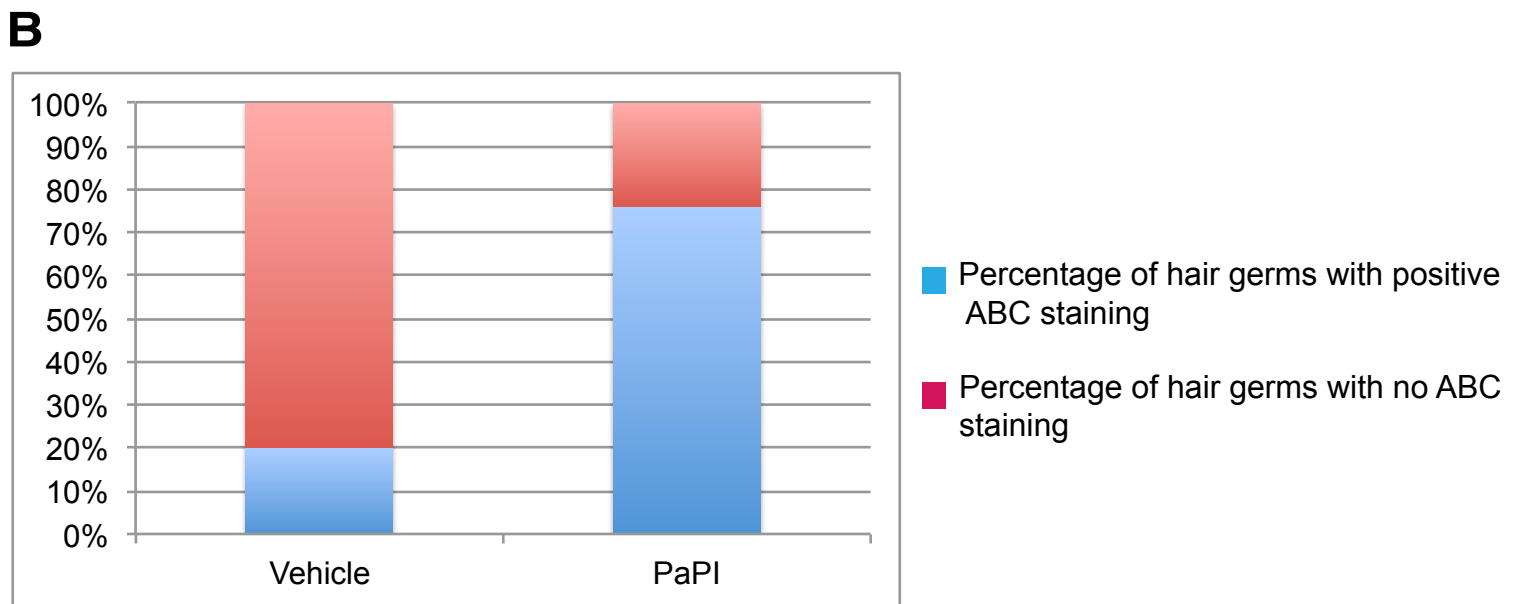
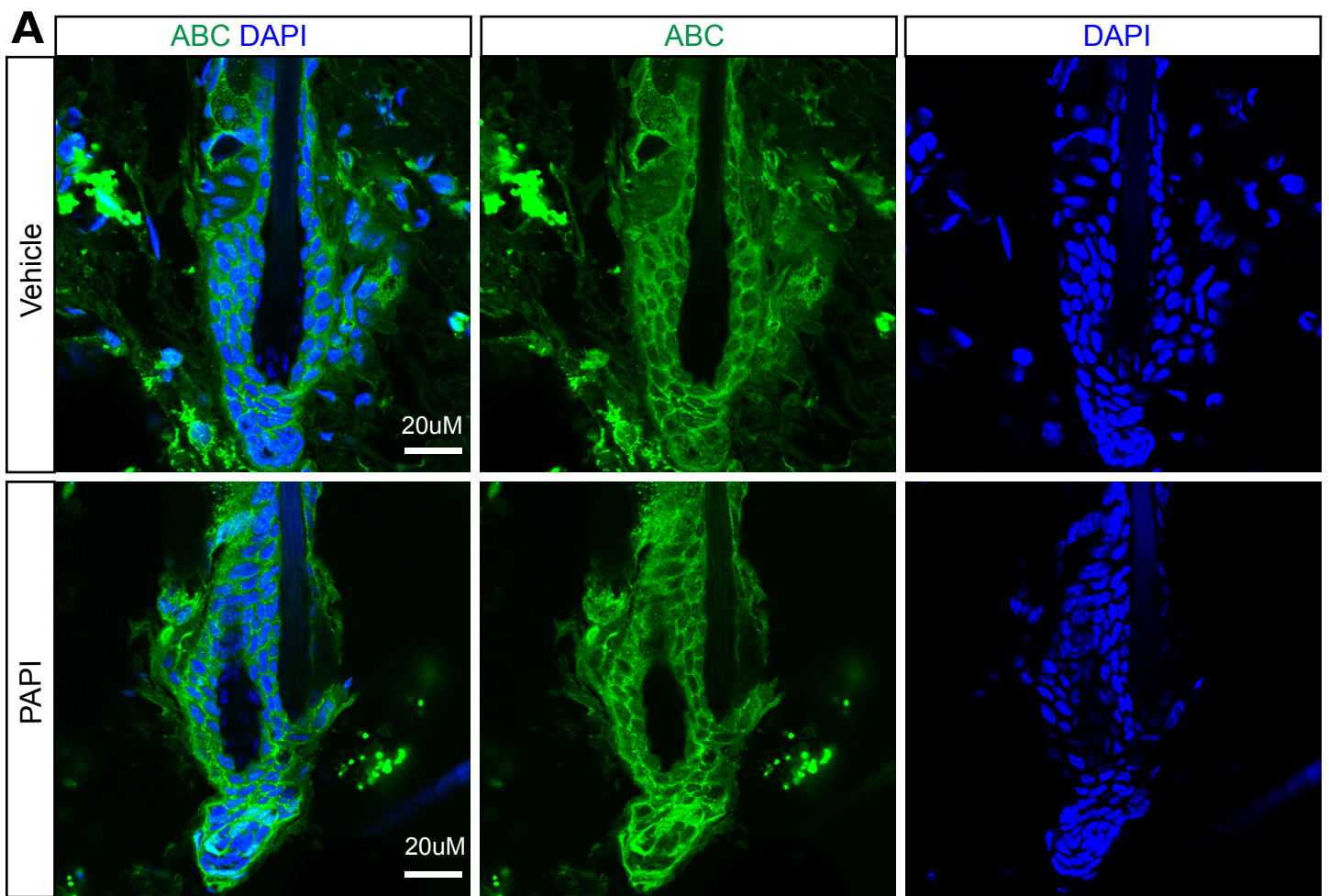
Supplementary Figure 2. A) Quantification of Fig. 2F. The number of Caspase 3 positive cells in a field in vehicle treated skin are very similar to the number of Caspase 3 positive cells in PaPI treated skin. B) Quantification of Fig. 2G. There are a lot more proliferating cells in PaPI treated skin. C) Beta catenin IHC staining in Adeno DKK injected skin samples that are PaPI treated and vehicle treated.



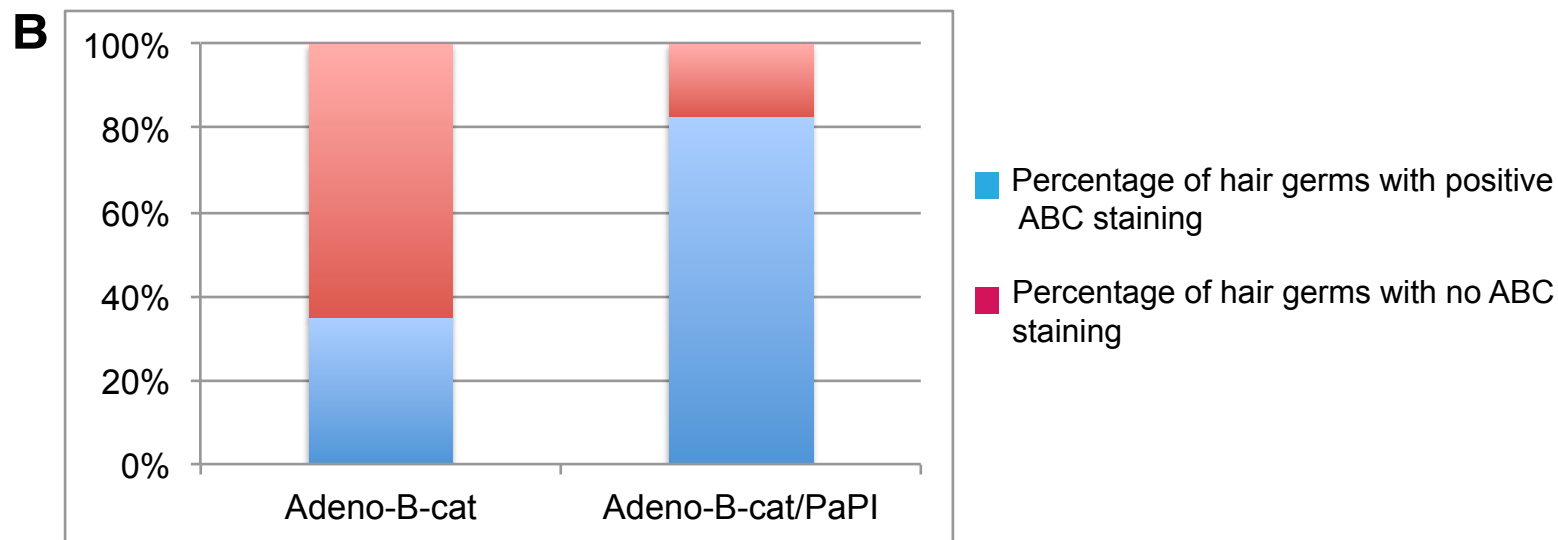
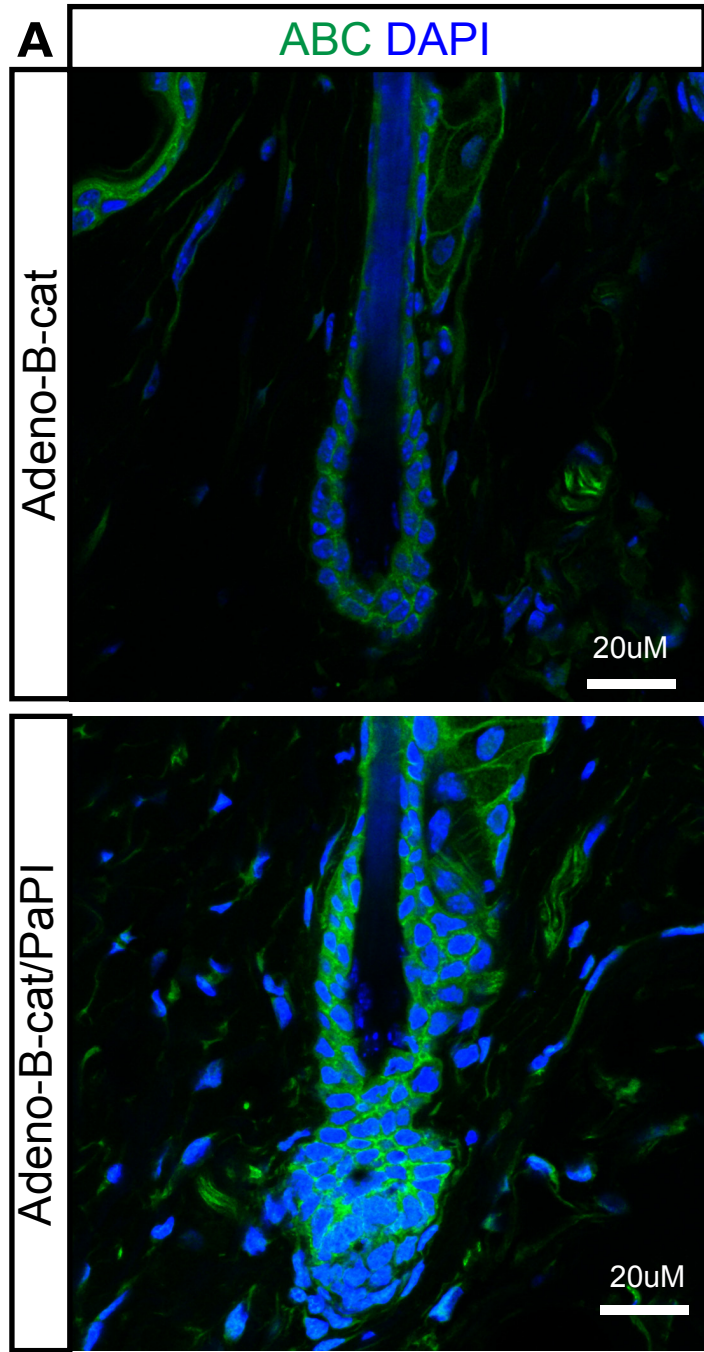
Supplementary Figure 3. PaPIs do not significantly effect the quiescence pathway. PaPI-treated murine telogen skin stained with quiescence markers NfatC1 and pSmad 1/5/8 antibody. Nfatc1 showed no difference in immunoreactivity but pSmad 1/5/8 was increased in PaPI treated murine skin at Day 47. Note that at the same period, β -catenin is already accumulating in the same cells.



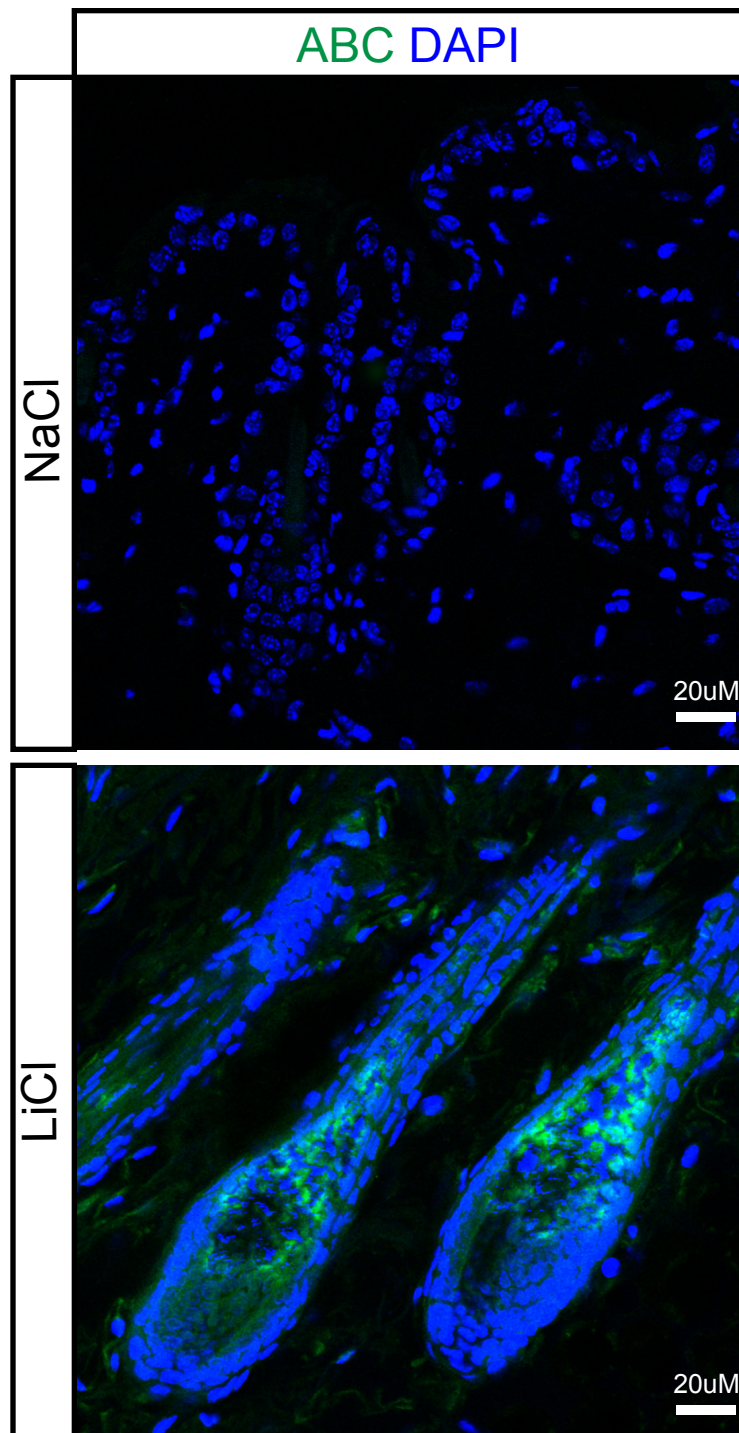
Supplementary Figure 4. Topical PaPI do not effect the onset of Gli-dependent cancers. Cohorts of PaPI-treated K5-Gli1 mice were treated with PaPI or vehicle and followed for onset of basal cell carcinoma-like tumors and hair loss that precedes tumor formation. No differences were noted. Treatment onset marked with arrow.



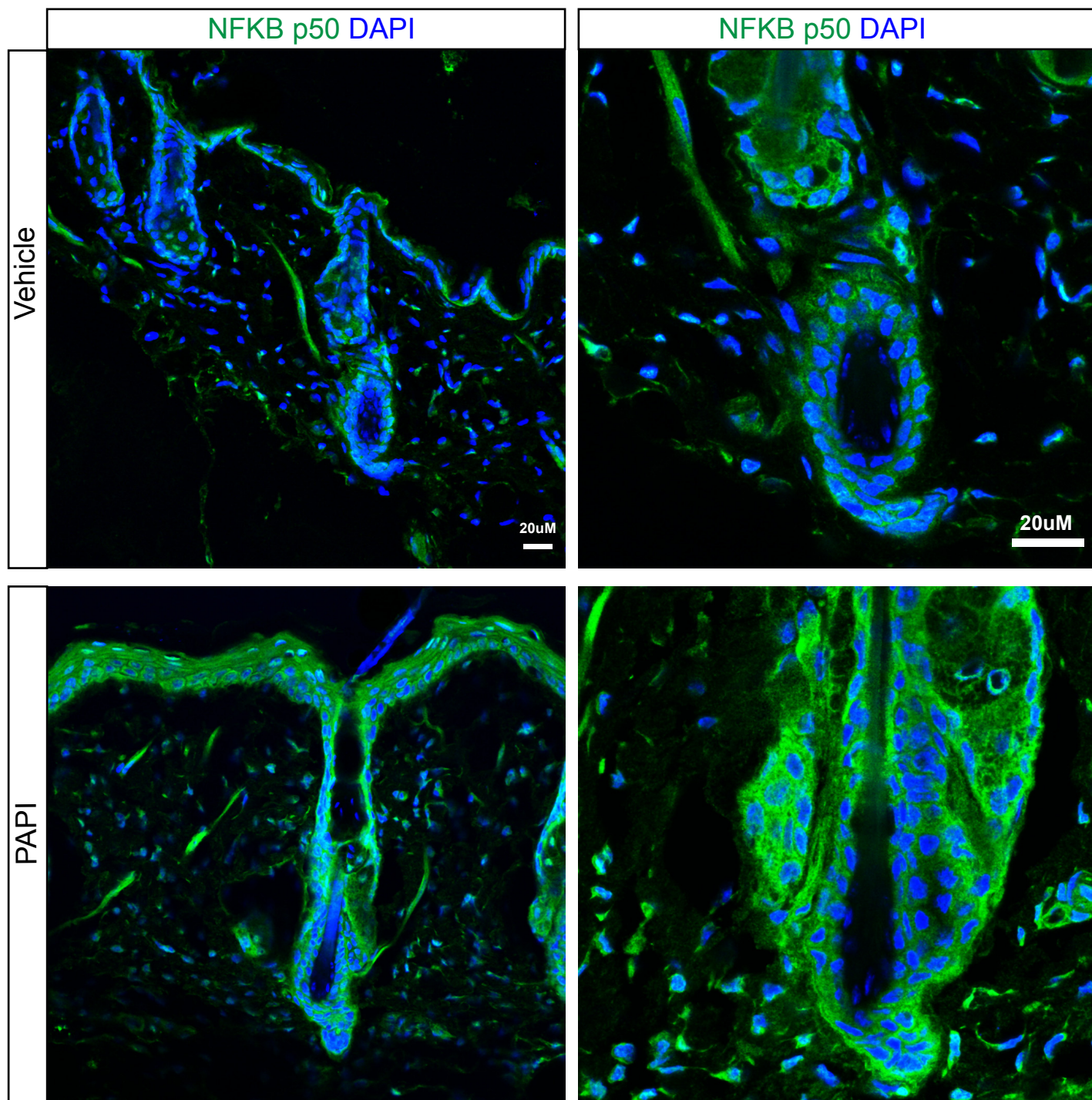
Supplementary Figure 5. A) Activated Beta Catenin (ABC) Staining in PAPI treated and vehicle treated skin. B) Quantification of ABC staining in PAPI treated and vehicle treated hair follicles.



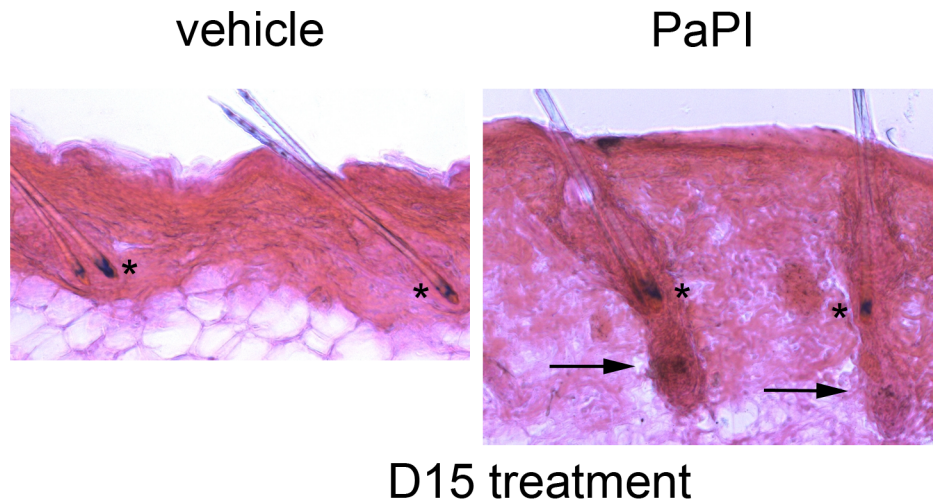
Supplementary Figure 6. A) ABC staining in adeno-B-cat injected and PaPI treated and adeno-B-cat injected skin. B) Quantification of (A).



Supplementary Figure 7. Activated Beta Catenin (ABC) staining in LiCl treated and NaCl treated skin



Supplementary Figure 8. NFKB p50 staining in vehicle treated and PaPI treated skin. Right side shows images with higher magnification.



Supplementary Figure 9. PaPI-treated Top-Gal mice accumulate β -galactosidase in early anagen/late telogen. Top-gal mice in telogen were treated with Bortezimib 1% every other day for 15 days, then stained with X-gal. The hair germ of treated mice accumulated activity prior to the onset of anagen (arrow), indicating that PaPIs induce Wnt activity in the hair germ. Asterisks indicate hair cycle independent X-gal activity.